

REMARKS/ARGUMENTS

Claims 6-11, 17, and 18 are in this application. Claims 1 – 5 and 12 – 16 have been canceled and replaced by new claims 17 and 18. Claim 6, 7, 9 and 10 have been made dependent from claims 17 or 18. Claim 8 has been made dependent from claim 7 and claim 11 has been made dependent from claim 10.

Referring to the grounds for objection or rejection, the objection to claims 6-11 is believed overcome by the amendment calling for dependency directly or indirectly from claim 17 or 18 in the alternative.

The rejection of claims 6-11 under 35 U.S.C. § 112, second paragraph, as being indefinite with regard to the word “customary” is obviated by the present amendment canceling claim 1 that used the word “customary.”

The rejection of claims 12-16 under 35 U.S.C. § 101 is obviated by cancellation of claims 12-16.

The rejection of claims 1-6 under 35 U.S.C. § 102(b) as anticipated by DE 198 31 285 is respectfully traversed. The rejection is believed to be overcome by new claims 17 and 18 and the dependency of claims 6-11 directly or indirectly from claim 17 or 18.

Claims 17 and 18 cover two alternative compositions of different PO/W value which solve the underlying problem, namely an insufficient foam stability, as addressed on page 2, lines 11 to 29 of the present description. The reason for the insufficient stability is the softening effect of the alcohol which is set free upon hydrolysis of the prepolymer in the course of the crosslinking reaction. The inventors have found that the softening effect of the alcohol, in particular of methanol can be controlled by the proper selection of the propellant polarity. The more alcohol the prepolymer releases upon crosslinking, the higher the hydrophobicity of the propellant mixture must be in order to prevent the foam from collapsing. This results in the finding that with dimethoxysilane groups the log PO/W value of the propellant gas component should be at least 1.90, and with trimethoxysilane groups at least 2.35, as called for respectively in claims 17 and 18.

The inventors assume that the saturation of the cell walls with propellant in the

first stage of foam formation is responsible for the observed effect. Non-polar propellant saturates the cell walls and prevents the alcohol from dissolving in the cell wall material in the early stage of the crosslinking reaction. This leaves time for the curing reaction and allows the alcohol to leave the cells at a later stage together with the propellant, see page 4, lines 6 to 13 of the present description.

The present claims are supported by the test results given on page 10 of the present specification. The use of trimethoxysilane terminated prepolymers with propellant of a log PO/W of 2.36 results in an acceptable foam; with a log PO/W of 2.27 or 2.03 however, the foam collapses, see test Nos. 5, 6 and 7. With the use of methyldimethoxysilane terminated prepolymers the transition to useful foams is with a log PO/W of 1.90; see test Nos. 8, 9 and 10.

DE 198 31 285 A1 to one of the present inventors does not anticipate the present invention. It gives the general teaching for the manufacture of mounting foams from silane terminated prepolymers, however, without any specific teaching for the selection of a particular propellant mixture for the foaming process. Example 1 of DE'285 describes a triethoxysilane terminated prepolymer that is foamed with isobutane. Triethoxysilane yields ethanol upon crosslinking, the amount of ethanol being much higher than the amount of methanol released from trimethoxysilane terminated prepolymers. Isobutane is the least polar propellant described in the present description. Thus, the only teaching contained in DE'285 is that with triethoxysilane terminated prepolymers the use of isobutane as a propellant results in an acceptable foam.

However, DE'285 also teaches that instead of isobutane other propellants can be used, such as disclosed in col. 4, lines 9 to 16. Thus, DE'285 discloses any combination of propellants (including such, which do not play any role in accordance with the present invention), however, fails to make a proper selection of propellants to solve the problem underlying the present invention. In fact, this problem wasn't known at the time of the filing of DE'285, and could not be deducted from the example given therein. The interdependency of polarity of the propellant and amount of the released alcohol was not known at that time. The teaching of the invention, namely to establish a suitable

definition and a lower limit for the polarity, was obtained only in the course of further investigations and experiments. The example of DE'285 does not teach the limit claimed in the present invention.

Regarding the prior art of record and not relied upon but considered pertinent to applicant's disclosure, since the present invention is related to problems that occur on the expulsion of foam from a can by means of propellants, US 7,153,923 and WO 2005/035616 are of no relevance. They relate to sealing compositions, not to foaming compositions. The prepolymers disclosed therein are not intended to be used in combination with propellants.

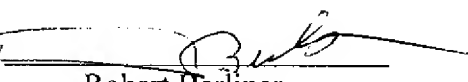
WO 02/066532 to Stanjek et al. also relates to foamable prepolymer compositions comprising alkoxysilane terminated polyurethane prepolymers. However, WO'532 mentions only one propellant, R 134 in example 4. There is no specific information on the foam quality. Thus WO'532 lacks any information on the suitability on a particular propellant and does not teach the limits of the present invention. R 134 disclosed in example 4 corresponds to R 134a exemplified in the present invention and has a log PO/W of 1.06, see page 6 of the present specification.

In view of the foregoing amendments and remarks, Applicant respectfully requests that a Notice of Allowance be issued.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-3881, under Order No. 7609-101 from which the undersigned is authorized to draw. A duplicate copy of this paper is enclosed.

Dated: June 15, 2009

Respectfully submitted

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Appl. No. 10/543,038
Amdt dated June 15 2009
Reply to Office Action of December 15, 2008
Att. Docket No.: 7206-103

Filing date: December 15, 2005
Applicant Name: Heinrich Sommer
Examiner: John M. Cooney
Art Unit: 1796

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